

**Mumbai University**

**Question Paper**

**[IDOL – REVISED COURSE]  
(APRIL – 2015)**

**PAPER - IV**

**ELECTIVE**

**GEOGRAPHIC  
INFORMATION  
SYSTEM**

**Time:** 3 Hours**Total Marks:** 100**N.B.:** (1) All Question are Compulsory.

(2) Make Suitable Assumptions Wherever Necessary And State The Assumptions Made.

(3) Answer To The Same Question Must Be Written Together.

(4) Number To The Right Indicates Marks.

(5) Draw Neat Labeled Diagrams Wherever Necessary.

(6) Use of Non – Programmable Calculator is allowed.

**Q.1 ATTEMPT ANY TWO QUESTIONS: (10 MARKS)**

- (A) What is Datum? Explain with suitable example. (5)
- (B) Explain the TIN Data Model with suitable example. (5)
- (C) Explain Network Database with suitable example. (5)
- (D) What is Descriptive Statistics? Explain. (5)

**Q.2 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

- (A) Discuss various components of GIS. (5)
- (B) Explain the Region Data Model with suitable example. (5)
- (C) Explain the following terms of Object Based Data Model and give suitable example. (5)
- (i) Association
- (ii) Aggregation
- (D) Explain with suitable example Cell-By-Cell Encoding Raster Data Structure. (5)
- (E) Explain Quad Tree with suitable example. (5)
- (F) What is the importance of header file in Raster Model? Explain with suitable example. (5)

**Q.3 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

- (A) What is the importance of Metadata? Explain. (5)
- (B) Explain the following terms: (5)
- (i) COGO
- (ii) Geometric Transformation
- (C) Write the four types of Transformation Methods. Also show their effects on a Rectangular Object. (5)
- (D) Explain Affine Transformation. (5)
- (E) List the Common Resampling methods and explain them. (5)
- (F) Write a short note on Root Mean Square Error. (5)

**Q.4 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

- (A) List the types of Attribute Data Based on Measurement Scale. Explain. (5)
- (B) Explain File and Hierarchical Database with suitable example. (5)
- (C) What is Normalization? What are the objectives of Normalization? (5)
- (D) Explain: (5)
- (i) Pie Chart Map
- (ii) Flow Map
- (E) Write a short note on Visual Hierarchy. (5)
- (F) Write a short note n Map Production. (5)

**[TURN OVER]**

**Q.5 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

- (A) What is Data Exploration? Explain. (5)
- (B) Explain Boxplots with suitable example. (5)
- (C) Describe Brushing Selection as a Technique for Data Exploration. (5)
- (D) Explain feature selection by Graphic Data Query with suitable example. (5)
- (E) Explain Spatial Data Query with suitable example. (5)
- (F) List different types of operation that can be carried out on Attribute Data. Explain with suitable example. (5)

**Q.6 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

- (A) Explain the following Map Manipulation Operations with example: (5)
  - (i) *Append*
  - (ii) *Split*
- (B) List and explain various Overlay Operations Based on feature type. (5)
- (C) Explain Spatial Autocorrelation with example. (5)
- (D) Explain the Reclassification Local Operation of Raster. (5)
- (E) What is the physical distance measure operation? (5)
- (F) Explain the raster Data Generalization Operation with suitable example. (5)

**Q.7 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

- (A) Explain the Inverse Distance Weighted Interpolation Local Method. (5)
  - (B) Explain the Thin-Plate Splines Local Method. (5)
  - (C) What is Kriging? Explain. (5)
  - (D) What is Spatial Interpolation? List and explain the types of Spatial Interpolation. (5)
  - (E) Explain Trend Surface Model with suitable example. (5)
  - (F) Describe how Semivariance can be used to quantify the Spatial Dependence in a Data Asset. (5)
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